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# *Tridentopsis cahuali* n. sp. (Siluriformes, Trichomycteridae), a new miniature tridentine from Paraguay System, in Argentina

by

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With 4 figures

## Abstract

A new species of *Tridentopsis* is described from a small pond and a shallow stream connected to rivers of Paraguay System, in Formosa Province, Argentina. A high number (11-13) of opercular odontodes distinguishes *T. cahuali* n. sp. from all other known species of the subfamily Tridentinae. Length of maxillary barbels and pectoral fin, number of anal and dorsal-fin rays and the presence of nasal barbel differentiate the new species from *T. tocantinsi* La Monte, 1939. Chromatophore distribution pattern, more slender body with a straight dorsal profile and different morphometrics separate *T. pearsoni* Myers, 1925 from the new species described herein.

## Resumen

Se describe una nueva especie de *Tridentopsis* colectada en pequeños cuerpos de agua pertenecientes a la cuenca del río Paraguay, en la provincia de Formosa, Argentina. El alto número de odontodes operculares distingue a *T. cahuali* n. sp. de todas las especies conocidas de la subfamilia Tridentinae. La longitud de las barbillas maxilares y de la aleta pectoral, el número de radios dorsales y anales y la presencia de barbillas nasales diferencian a la nueva especie de *T. tocantinsi* La Monte, 1939. El patrón de distribución de los cromatóforos, el cuerpo más estilizado con perfil dorsal plano y algunas diferencias morfométricas separan a *T. pearsoni* Myers, 1925 de la nueva especie aquí descripta.

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## INTRODUCTION

Several species of the Neotropical catfish family Trichomycteridae have small body size as adults. Few species reaching a little more than twenty millimeters in standard length are included in the subfamily Tridentinae. All known tridentine species have been described from rivers of Amazon Basin or Maracaibo Basin. The examination of a collection of freshwater fishes from small shallow ponds and streams in Formosa Province, Argentina, reveals the presence of a miniature tridentine which has been assigned herein to *Tridentopsis* MYERS, 1925. The description of the new species is the purpose of the present paper.

## METHODS

All measurements are expressed as percentages of standard length or head length, as indicated. Predorsal, preventral and preanal-fin lengths are measured point-to-point with caliper under stereomicroscope. The rest of the measurements are taken as straight lines with ocular micrometer. Distance between snout tip and eye is obtained from anterior middle snout point to the intersection of eye and head margin. Head width is measured at opercular level, between outermost point of odontodes. Last two dorsal and anal fin rays are counted as one ray.

Specimens examined in this study are deposited in the Collections of the following Institutions: Museo de La Plata (MLP); American Museum of Natural History (AMNH); California Academy of Sciences (CAS); Muséum d'Histoire naturelle de Genève (MHNG) and National Museum of Natural History (USNM).

### **Tridentopsis cahuali** n. sp.
(Figs 1, 2, 3 and 4)

Holotype: MLP 5-IX-89-1, female, standard length 20.8 mm; shallow small artificial pond in the private protected area Estancia El Bagual, Formosa Province, Argentina, 26°10'53" S and 58°56'39" W. Collectors: Claudia and Alberto Yanosky, May 1987.

Paratypes: 25 specimens collected with the holotype: MLP 5-IX-89-2, 15 specimens, standard length (SL) 18.5 mm-22.2 mm (two individuals cleared and counterstained). AMNH 89300, 2 specimens, 19-20 mm SL. CAS 67699, 4 specimens, 20-22.8 mm SL. MHNG 2479.08, 4 specimens, 20.3-21.86 mm SL. MLP 27-XII-89-1, 3 specimens, 22.15-24 mm SL; arroyo Mbiguá, the same protected area in the province of Formosa, Argentina; collectors C. and A. Yanosky, November 1989.

Additional material examined: Five specimens of *Tridentopsis pearsoni* MYERS, 1925, CAS 28259, Lake Rogoagua, Bolivia. Four specimens of *Tridensimilis venezuelae* SCHULTZ, 1944, USNM 121291, río Negro below mouth of río Yasa, Maracaibo Basin, Venezuela.

#### DIAGNOSIS

A *Tridentopsis* with a higher number of opercular odontodes than those previously known. *T. cahuali* n. sp. has 11 to 13 opercular odontodes while both *T. pearsoni* and *T. tocantinsi* have ten. Other counts and morphometrics also help to differenciate the new species.

#### DESCRIPTION

Morphometrics of holotype and 19 paratypes are presented in table 1. Dorsal profile of body slightly or markedly convex from snout tip to occipital region, concave after

TABLE 1.

Morphometrics of *Tridentopsis cahuali* n. sp. and *T. pearsoni*. Standard length is expressed in mm. Other values are expressed as percentages of indicated body length

| | *Tridentopsis cahuali* n. sp. N = 20 | | | *Tridentopsis pearsoni* N = 5 | |
|---|---|---|---|---|---|
| | holotype | range | average | range | average |
| Standard length | 20.80 | 18.5 - 22.2 | | 19-20 | |
| ratios in percentage of standard length | | | | | |
| predorsal fin length | 72.11 | 67.56- 72.38 | 70.62 | 71.07- 76.31 | 72.72 |
| preventral fin length | 46.73 | 46.05- 51.77 | 48.76 | 52.25- 55.17 | 53.59 |
| preanal fin length | 69.71 | 64.56- 70.00 | 68.06 | 71.07- 72.15 | 71.62 |
| body depth at anal fin origin | 21.63 | 18.88- 22.30 | 20.23 | 16.70- 21.35 | 18.67 |
| caudal peduncle length | 9.23 | 7.20- 10.54 | 8.19 | 8.42- 9.87 | 8.94 |
| dorsal fin base | 8.65 | 7.65- 10.36 | 8.72 | 7.50- 9.54 | 8.36 |
| anal fin base | 20.67 | 20.05- 25.00 | 21.45 | 18.50- 22.05 | 20.31 |
| distance between dorsal fin origin and middle caudal fin base | 32.30 | 29.40- 35.36 | 32.37 | 30.08- 34.37 | 33.22 |
| distance between anal fin origin and middle caudal fin base | 33.46 | 32.07- 37.53 | 34.44 | 31.12- 34.32 | 33.86 |
| head length | 18.99 | 18.01- 21.57 | 19.42 | 16.08- 18.50 | 17.27 |
| greatest head depth | 11.53 | 9.67- 12.38 | 11.24 | 8.79- 9.75 | 9.39 |
| ratios in percentage of head length | | | | | |
| outer maxillary barbel | 72.15 | 61.95- 76.31 | 69.60 | 68.11- 75.31 | 71.43 |
| inner maxillary barbel | 50.12 | 45.52- 55.64 | 48.21 | N = 3 43.43- 45.58 | 44.50 |
| distance between snout tip and eye margin | 50.12 | 47.25- 54.24 | 49.62 | 49.27- 56.25 | 53.13 |
| head depth | 60.75 | 54.32- 61.53 | 58.34 | 52.17- 56.52 | 54.40 |
| head width | 113.92 | 96.38-123.28 | 112.06 | 115.94-126.56 | 122.48 |
| interorbital width | 62.78 | 57.50- 69.90 | 62.39 | 63.82- 68.75 | 66.32 |
| horizontal orbital length | 28.10 | 23.17- 28.53 | 26.12 | 27.35- 30.93 | 28.33 |
| nasal barbel length | 16.45 | 11.50- 21.70 | 16.42 | 26.08- 30.00 | 28.53 |

occipital area, gently arched from that point to dorsal fin origin, slanted along dorsal fin and straight between last dorsal ray insertion and caudal fin. Ventral profile of body convex, maximum depth just anterior to pelvic fin insertion, straight from that point to anal fin origin; anal fin base postero-dorsally oriented; ventral profile of caudal peduncle almost straight.

Body robust, laterally compressed in posterior half. Head straight between eyes; at opercular level, wider than long; anterior head margin semicircular. Nasal barbel present, its length shorter than eye and slightly longer than space between nares. Posterior nares transversely opened, placed nearer than anterior ones. Eyes lateral, covered by translucent skin. Cranial fontanelle enormous. Mouth wide, inferior, with two pairs of maxillary barbels; outer barbel reaching opercular margin or pectoral fin base. Dentary with four rows of conical teeth, their tips posteriorly recurved; four of five depressible teeth in inner



FIG. 1.

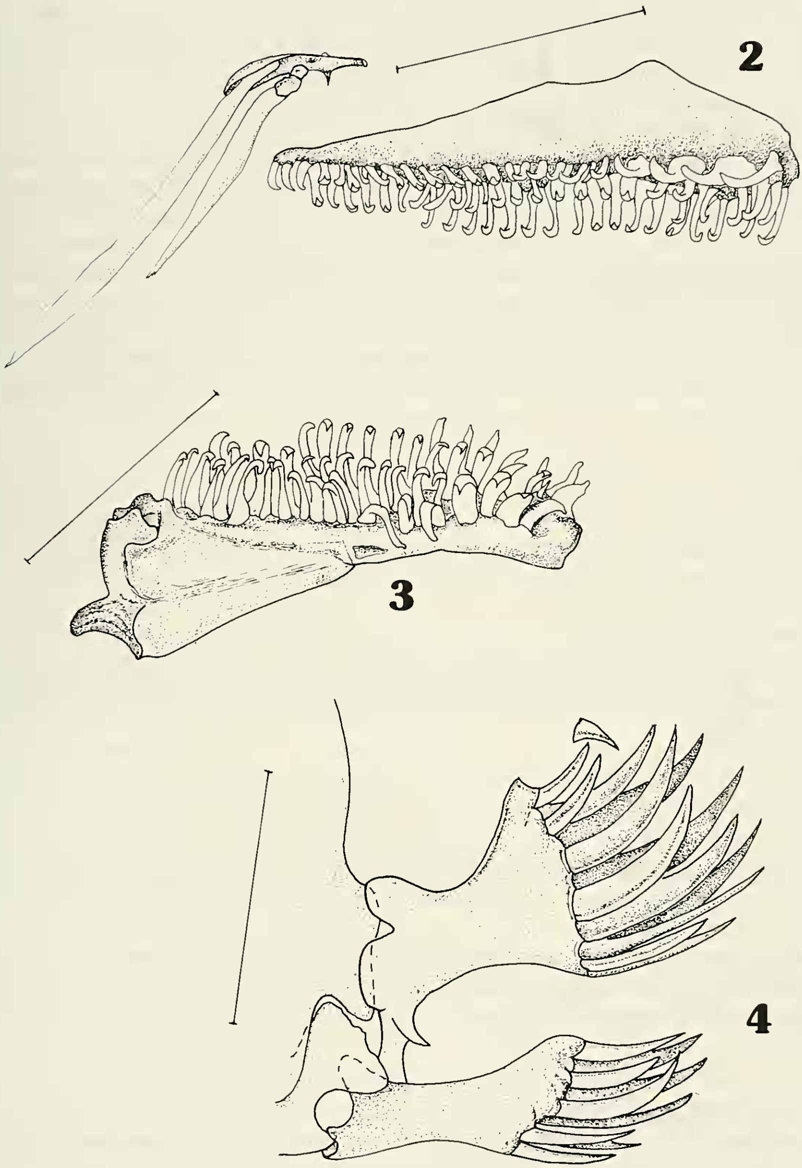
*Tridentopsis cahuali* n. sp., holotype, MLP 5-IX-89-1, 20.80 mm standard length, 26°10'53'' S and 58°56'39'' W, Formosa Province, Argentina.

row, larger than the rest (Fig. 3). Three rows of conical premaxillary teeth; inner row also with four teeth large and depressible. Small maxillary tooth (Fig. 2).

Eleven to thirteen slightly recurved opercular odontodes, forming a bunch completely separated from interopercular one; eight or nine interopercular odontodes, twelve in one specimen; all odontodes conical and posteriorly directed (Fig. 4).

Axillary organ well developed. Droplets appear just posterior to opercle. Pores of lateral line apparently not developed. Only two large pores in flanks, being apertures of postemporal sensory canal. Lipid drops in different areas of body. Miniature epidermal papillae on body.

Ray-less cutaneous fold in dorsal and anal fins. Small dorsal fin, strongly convex anteriorly; dorsal origin slightly behind vertical through anal fin insertion; dorsal fin rays ii,5 (13 specimens) or ii,6 (4 specimens including holotype) or iii,4 (3 specimens). Caudal fin slightly forked, upper lobe larger than lower. Triangular pectoral fin with i,4,i; flattened first ray longest, its length twice or more that of last ray. Pelvic fin small; i,3,i; its origin nearer snout tip than base of caudal fin rays, except in two specimens; pelvic fin tip falling far from anal fin insertion. Anal fin base long; iii,14 (14 individuals including holotype) or iii,15 (4 specimens) or iii,16 (2 specimens); anal fin margin straight; fin ray lengths decreasing from first to last branched ray. Fin rays divided only once.




FIGS 2-4.

*Tridentopsis cahuali* n. sp., cleared and stained specimen 19.8 mm standard length. Scale bar represents 0.5 mm. 2: internal view of left premaxilla and maxilla. 3: internal view of left lower jaw. 4: lateral view of left opercular and interopercular odontodes.

### Coloration

Specimens preserved in alcohol: ground color pale yellowish; translucent caudal peduncle; belly translucent in females. All chromatophores dark black, rounded or star-like, except some deep hyphen-shaped chromatophores along flanks. Superficial chromatophores scattered on head, sometimes concentrated on snout or forming dots between anterior and posterior nares, anterior to dorsal fontanelle or over dorsal eye margin. Dense chromatophores beneath skin, covering brain. Small black spot under opercular and interopercular odontodes. Broad middorsal stripe crossing along back, between supraoccipital margin and dorsal fin; stripe narrow from last dorsal fin ray insertion to end of caudal peduncle. Some chromatophores spread on flanks, near mid-dorsal line. Dark pigmentation over five or six posterior vertebrae. Large chromatophores in dorsal wall of body cavity, appearing as a broad lateral band, posteroventrally oriented. Chromatophores forming an anal fin base line and two extremely narrow lines above the former. Caudal peduncle bounded by many chromatophores. All fins, excluded hyaline pelvics, with elongate chromatophores around ray surfaces; only four specimens with pigmented membranes. Dark spot in pectoral fin base of some specimens.

### Etymology

The specific name from Cahual, an aboriginal araucanian word that is the name of an araucanian chief and the name of the private protected area in which the specimens were collected.

### Distribution

The species is known from a small artificial pond with clear water and a shallow stream (depth about 60 centimeters); both habitats are connected to tributaries of Paraguay River.

## DISCUSSION

The subfamily Tridentinae currently consists of four genera and a few miniature species. The monotypic *Miuroglanis* Eigenmann & Eigenmann, 1889, based on a single specimen, is recognized by the presence of confluent opercular and interopercular odontodes and the possession of gill membranes joined to the isthmus. The remainder three genera comprise six species with gill membranes free from the isthmus and distinct opercular and interopercular odontodes.

### Key to the genera of Tridentinae

1. Gill membranes united to isthmus, opercular and interopercular odontodes confluent .......... *Miuroglanis* Eig. & Eig.
   Gill membranes free from isthmus, opercular and interopercular odontodes distinct .......... 2
2. Body extremely slender, body depth 13; barbels minute; 3 opercular and 3 interopercular odontodes, pelvic fin small .......... *Tridens* Eig. & Eig.
   Body more compact, body depth 4.5-8; greater number of opercular and interopercular odontodes; greater development of maxillary barbels; pelvic fin well developed .......... 3

3. 6 or 7 opercular odontodes; 4-6 interopercular odontodes; body depth 8; 22-23 anal-fin rays . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *Tridensimilis* Schultz
   9-13 opercular odontodes; 8-12 interopercular odontodes; body depth 4.5-6.1; 17-21 anal-fin rays . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *Tridentopsis* Myers

### Key to the species of *Tridentopsis*

1. 10 dorsal-fin rays; 21 anal-fin rays; nasal barbel absent; outer maxillary barbel reaching anterior eye margin . . . . . . . . . . . . . . . . . . . . *T. tocantinsi* La Monte, 1939
   7-8 dorsal-fin rays; 17-20 anal-fin rays; nasal barbel present; outer maxillary barbel reaching opercular flap or pectoral-fin base. . . . . . . . . . . . . . . . . . . . . . . 2
2. 9-10 opercular odontodes; head length 5.58-6.21; head depth 10.25-11.37; ventral-fin origin midway between snout and caudal-fin base or nearer caudal-fin base. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *T. pearsoni* Myers, 1925, type species
   11-13 opercular odontodes; head length 4.63-5.50; head depth 8.07-9.98; ventral-fin origin nearer snout than caudal-fin base. . . . . . . . . . . . . *T. cahuali* n. sp.

The genus *Tridens* as first described by Eigenmann & Eigenmann 1889 comprised two species, *T. melanops* and *T. brevis,* although the authors suggested that both species would belong to different genera.

Myers (1925) described the genus *Tridentopsis* on the basis of the much more compact body, the greater number of opercular and interopercular odontodes, the larger development of maxillary barbels and the presence of nasal barbels. None the less, Myers commented later in the same paper that this feature should be probably removed from the generic diagnosis. He placed *T. brevis* Eigenmann & Eigenmann and his new species *T. pearsoni* within *Tridentopsis. Tridens* was restricted to the genotype *T. melanops.*

In 1944 Schultz described the genus *Tridensimilis* which is distinguished from *Tridentopsis* by the possession of six opercular and four to six interopercular odontodes, 22-23 anal-fin rays and five branchiostegal rays. Schultz preferred to include *T. brevis* Eigenmann & Eigenmann in his new genus together with the new species *Tridensimilis venezuelae.* The absence of osteological information on some species does not allow a discussion about the validity of both genera *Tridentopsis* and *Tridensimilis.*

The new species described in the present paper has a compact body form, depth of body 4.6-5.6, greater number of opercular (11-13) and interopercular (8-12) odontodes, a nasal barbel and 17-19 anal-fin rays. For these reasons *T. cahuali* n. sp. is placed in the genus *Tridentopsis* Myers, 1925.

*Tridentopsis cahuali* n. sp. differs from the previously described species of *Tridentopsis* in the number of opercular odontodes. The possession of longer maxillary barbel and pectoral fin, the presence of nasal barbel and a low number of anal (17-19 versus 21) and dorsal (7-8 versus 10) fin rays distinguish *T. cahuali* n. sp. from *T. tocantinsi* La Monte, 1939. *T. pearsoni* has more slender body compared with *T. cahuali* n. sp. and the dorsal profile very straight as Myers (*op. cit.*) pointed out. In the former, chromatophores on flanks are regularly distributed between middorsal line and lateral line area. Furthermore, the latter has shorter nasal barbel, deeper, shorter and narrower head and deeper body at dorsal fin origin. In addition, pelvic fin is inserted nearer the snout than the base of caudal (except two specimens) while in *T. pearsoni* that fin is placed mid-

way between snout tip and caudal base or nearer caudal base than tip of snout. The dorsal fin origin of *T. cahuali* n. sp. is always behind the vertical through anal fin origin whereas the females of *T. pearsoni* have both fin origins at the same level (Table 1).

A previous record of *T. pearsoni* from Paraná Basin, in Chaco Province, Argentina, was reported by CASTELLO *et al.* (1978). Unfortunately, the specimens were not found in the Collection of Museo Argentino de Ciencias Naturales Bernardino Rivadavia. However, the features described and figured show that the specimens do not belong to *T. pearsoni*. The number of opercular odontodes resembles that of *T. cahuali* n. sp., although the presence of trifid opercular odontodes does not agree with those known in the latter.

Trophic specializations have been reported in some trichomycterid species. Some of them are blood-feeding parasites while other species are scale-feeders or mucus-feeders. No evidence of food items were found in six stomachs of *T. cahuali* n. sp. examined, notwithstanding, the presence of some features as the depressible teeth in both jaws and the maxillary tooth suggest the possibility of parasitic behaviour, at least in part of its life.

## ACKNOWLEDGMENTS

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## BIBLIOGRAPHY

CASTELLO, H. P., M. ERLICH, I. WAISS & A. PUIG. 1978. Adiciones a la fauna de los peces de los ríos Paraná Medio y Bermejo. *Rev. Mus. Arg. Cs. Ns. B. Rivadavia, Zool.* 12 (9): 119-135.

EIGENMANN, C. 1918. The Pygidiidae, a family of South American Catfishes. *Mem. Carnegie Mus.* 7 (5): 259-398.

— & EIGENMANN, R. 1890. A revision of South American Nematognathi or Catfishes. *Occ. Pap. Calif. Acad. Sci.* 1: 1-508.

LA MONTE, F. 1939. *Tridentopsis tocantinsi,* a new pygidiid fish from Brazil. *Amer. Mus. Nov.* 1024.

MYERS, G. S. 1925. *Tridentopsis pearsoni* a new pigidiid catfish from Bolivia. *Copeia* 1925, 148: 83-86.

— 1944. Two extraordinary new blind nematognath fishes from Rio Negro, representing a new subfamily of Pygidiidae, with a rearrangment of the genera of the family and illustrations of some previously described genera and species from Venezuela and Brazil. *Proc. Calif. Acad. Sci.* (4th series) 23 (40): 591-602.

PEARSON, N. E. 1924. The Fishes of the Eastern slope of the Andes. I. The fishes of the Rio Beni Basin, Bolivia, collected by the Mulford Expedition. *Ind. Univ. Studies* 11 (64): 1-83.

SCHULTZ, L. P. 1944. The Catfishes of Venezuela, with descriptions of thirtyeight new forms. *Proc. U. S. Nat. Mus.* 94 (3172): 173-338.